

PURGEABLE AROMATIC ORGANICS BY PURGE AND TRAP GC/PID EPA 602					
Facility Name: _____ VELAP ID: _____					
Assessor Name: _____ Analyst Name: _____ Inspection Date: _____					
Relevant Aspect of Standards	Method Reference	Y	N	N/A	Comments
Records Examined: SOP Number/ Revision/ Date _____ Analyst: _____					
Sample ID: _____ Date of Sample Preparation: _____ Date of Analysis: _____					
Are sample vials 25 mL, glass, equipped with screw cap with a hole, detergent washed, rinsed with tap and DI water, and dried at 105°C before use?	5.1.1				
Are septa Teflon-faced silicon, washed as above, and dried for 1 hour at 105°C?	5.1.2				
Can purge device accept 5 mL of sample with a water column at 3 cm deep?	5.2.1				
Is trap at least 25 cm long with at least 0.105 inch inside diameter? Are adsorbents packed using minimum lengths of 1 cm methyl silicone, 15 cm Tenax (2,6-diphenylene oxide polymer), and 8 cm silica gel?	5.2.2				
Is the desorber capable of rapidly heating the trap to 180°C?	5.2.3				
GC column 6 ft x 0.1 inch inner diameter, packed with 1% SP-1000 on Carbopack B (60/80 mesh) or equivalent?	5.3.1				
What is conformation column used Chromosorb or equivalent?	5.3.2				
If residual chlorine is present, is sodium thiosulfate added to the empty bottle prior to sampling?	9.1				
Are samples iced or refrigerated from time of collection until analysis?	9.1				
Are samples preserved with HCl to pH of <2?	9.2				
Are sample vials sealed with no entrapped air bubbles?	9.2				
Are all sample analyzed within 14 days of collection?	9.3				
Notes/Comments:					

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Are stock standards prepared in methanol at least monthly and stored at 4 C?	6.6				
Is the calibration a minimum of 3 concentration levels for each parameter, with one near but above the MDL?	7.3				
Is the working calibration curve verified on each working day by analyzing a QC check sample (second source) containing 10 µg/L of each parameter? Acceptance criteria in Table 2 must be met, or the test repeated for failed parameters.	7.5				
Are at least 10% of samples from each sample site spiked at the regulatory limit or 1–5 times background concentration, whichever is higher; if no regulatory limit, are they spiked at 20 µg/L or 1-5 times background concentration, whichever is higher? (Minimum of one spike per month.)	8.3				
Do spike recoveries meet the criteria in Table 2? If criteria are not met, is a QC check standard containing 20 µg/L of each failed parameter analyzed and assessed per Table 2?	8.3				
Are spike results assessed for each compound after 5 spiked wastewater samples by calculating the average percent recovery and the standard deviation of the percent recovery, and is this assessment updated on a regular basis (i.e. after 5-10 new spike measurements)?	8.6				
Are all samples spiked with at least one surrogate compound such as Trifluorotoluene and is the percent recovery calculated?	8.7				
Is purge gas (helium) flow rate adjusted to 40 mL/min?	10.3				
Is 5.0 mL of sample injected? 10uL surrogate & internal std?	10.4				
Is sample purged for 12.0 minutes ± 0.1 seconds at RT?	10.6				
Is trap desorbed at 180°C while backflushing the trap with an inert gas at 20-60 mL/min. for four minutes?	10.7				
Notes/Comments:					

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After desorbing, is the trap reconditioned by returning to purge mode at 180°C, waiting seven minutes, and allowing the trap to cool between samples?	10.9				
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Notes/Comments:

Table 1—Chromatographic Conditions and Method Detection Limits

Parameter	Retention time (min)		Method detection limit (µg/L)
	Column 1	Column 2	
Benzene	3.33	2.75	0.2
Toluene	5.75	4.25	0.2
Ethylbenzene	8.25	6.25	0.2
Chlorobenzene	9.17	8.02	0.2
1,4-Dichlorobenzene	16.8	16.2	0.3
1,3-Dichlorobenzene	18.2	15.0	0.4
1,2-Dichlorobenzene	25.9	19.4	0.4

Column 1 conditions: Supelcoport (100/120 mesh) coated with 5% SP-1200/1.75% Bentone-34 packed in a 6 ft x 0.085 in ID stainless steel column with helium carrier gas at 36 mL/min flow rate. Column temperature held at 50°C for two minutes then programmed at 6°C/min to 90°C for a final hold.

Column 2 conditions: Chromosorb W-AW (60/80 mesh) coated with 5% 1,2,3-Tris(2-cyanoethoxy) propane packed in a 6 ft x 0.085 in ID stainless steel column with helium carrier gas at 30 mL/min flow rate. Column temperature held at 40°C for two minutes then programmed at 2°C/min to 100°C for a final hold.

Table 2—Calibration and QC Acceptance Criteria-Method 602*

Parameter	Range for Q (µg/L)	Limit for s (µg/L)	Range for \bar{X} (µg/L)	Range for P, P _s (%)
Benzene	15.4-24.6	4.1	10.0-27.9	39-150
Chlorobenzene	16.1-23.9	3.5	12.7-25.4	55-135
1,2-Dichlorobenzene	13.6-26.4	5.8	10.6-27.6	37-154
1,3-Dichlorobenzene	14.5-25.5	5.0	12.8-25.5	50-141
1,4-Dichlorobenzene	13.9-26.1	5.5	11.6-25.5	42-143
Ethylbenzene	12.6-27.4	6.7	10.0-28.2	32-160
Toluene	15.5-24.5	4.0	11.2-27.7	46-148

Q = Concentration measured in QC check sample, in µg/L. (Section 7.5.3).

s = Standard deviation of four recovery measurements, in µg/L. (Section 8.2.4).

\bar{X} = Average recovery for four recovery measurements, in µg/L. (Section 8.2.4).

P, P_s = Percent recovery measured (Section 8.3.2, Section 8.4.2).

*Criteria were calculated assuming a QC check sample concentration of 20 µg/L.

NOTE: These criteria are based directly upon the method performance data in Table 3. Where necessary, the limits for recovery have been broadened to assure applicability of the limits to concentrations below those used to develop Table 3.